WHAT IS CLAIMED:

1. A method of controlling a turbine/alternator comprising a gas driven turbine and permanent magnet alternator on a common shaft comprising:

providing electric power to said turbine/alternator through an inverter circuit to start said turbine/alternator to achieve self-sustained operation of said turbine/alternator;

reconfiguring said inverter circuit to output electric power from said turbine/alternator when self-sustained operation of said turbine/alternator is achieved; and

providing electric power to said turbine/alternator controlling frequency and voltage of the electric power as a function of time.

2. The method of claim 1, wherein controlling the frequency and voltage of the electric power is performed as a function of time and rotation speed of said turbine/alternator.

3. The method of claim 1, wherein during providing electric power to said turbine/alternator, shaft position changes of said turbine/alternator are sensed by a position encoder.

4. The method of claim 3, wherein a signal generator processes the output information form said position encoder to output at a frequency which is a function of engine speed of said turbine/alternator.

5. The method of claim 3, wherein a signal from the position encoder is used to control the inverter.

6. The method of claim 4, wherein said inverter circuit comprises an inverter, and the output frequency from the signal generator is used to control the frequency of the inverter output voltage.

7. The method of claim 3, wherein said position encoder comprises a shaft position sensor.

8. The method of claim 7, wherein said shaft position sensor is a Hall effect sensor.

9. The method of claim 8, wherein said inverter circuit is controlled to generate a three-phase output to ramp said turbine/alternator to an ignition speed.

10. The method of claim 7 further comprising phasing the shaft position sensor by causing of said turbine/alternator having an armature to rotate at least once.

11. The method of claim 10, wherein said shaft position sensor is a Hall effect sensor.

12. The method of claim 1, wherein during providing electric power to said turbine/alternator, controlled combustion of fuel and air is provided to said gas driven turbine of said turbine/alternator.

13. The method of claim 1, wherein when reconfiguring said inverter circuit, said inverter circuit is connected to said turbine/alternator through a rectifier.

14. The method of claim 1, wherein said inverter circuit comprises an output filter for filtering said electric power, and said output filter is removed when providing electric power to said turbine/alternator through said inverter circuit.

15. An electric system for a turbine/alternator comprising gas driven turbine and permanent magnet alternator on a common shaft comprising:

an inverter provide for operation of said turbine/alternator;

means to provide electric power to said turbine/alternator through said inverter to start said turbine to achieve self-sustained operation of said turbine/alternator;

means to reconfigure said inverter to output electric power from said permanent magnet turbine/alternator to supply the electric power to a load,

wherein the frequency and voltage of the electric power provided to said turbine/alternator is controlled as a function of time to start said turbine/alternator.

16. The electric system of claim 15, wherein frequency and voltage of the electric power provided to said turbine/alternator is controlled as a function of time and rotation speed of said turbine/alternator.

17. The electric system of claim 16, wherein a position encoder is provided to said turbine/alternator for sensing shaft position changes of said turbine/alternator.

18. The electric system of claim 17, wherein a signal generator processes output information form said position encoder to output at a frequency as a function of engine speed of said turbine/alternator.

19. The electric system of claim 17, wherein a signal from the position encoder is used to control said inverter.

20. The electric system of claim 19, wherein the variable frequency output from the signal generator is used to control the frequency of the inverter output voltage.

21. The electric system of claim 17, wherein said position encoder comprises a shaft position encoder.

22. The electric system of claim 21, wherein said shaft position sensor is a Hall effect sensor.

23. The electric system of claim 22, wherein said inverter circuit is controlled to generate a three-phase output to ramp said turbine/alternator to an ignition speed.

24. The electric system of claim 21, further comprising phasing the shaft position sensor by causing an said turbine/alternator having an armature to rotate at least once.

25. The electric system of claim 24, wherein said shaft position sensor is a Hall effect sensor.

26. The electric system of claim 25, further comprising means to provide controlled combustion of fuel and air to said gas driven turbine to achieve self-sustained operation of said gas driven turbine.

27. The electric system of claim 25, wherein said means to reconfigure said inverter connects said inverter to said turbine/alternator through a rectifier.

28. The electric system of claim 25, wherein said load comprises a power line, and said means to reconfigure said inverter supplies electric power to said power line at a common line voltage and frequency.

29. The electric system of claim 25, further comprising an output filter for filtering said electric power, which output filter is removable when said means to provide electric power to said turbine/alternator.